

Crystal Enterprise™ Solution Kit for mySAP.com®

User's Guide

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Welcome to Crystal Enterprise–Solution Kit for mySAP.com **1**

This chapter briefly outlines the intended audience of the various procedures included in this guide. Product registration and technical support information is also included, along with a brief description of the document conventions used within this guide.

Welcome

Welcome to Crystal Enterprise™ Solution Kit for mySAP.com®. When combined with Crystal Reports, or with the enterprise reporting power of Crystal Enterprise or Seagate Info, the Solution Kit for mySAP.com provides you, the SAP user, with the ability to extract the business intelligence contained within your SAP R/3 and BW systems.

This *User's Guide* leads you through the various reporting tasks that the Solution Kit for mySAP.com enables you to perform. When combined, the various components enable you to report directly off your SAP R/3 and BW data and to generate Crystal reports from SAP queries.

Who should use this guide?

This guide includes instructional information for report designers and report users. The major product components—the Data Access Kit, the BW OLAP Kit, and the SAPGUI Integration Kit—are treated separately, and the documentation for each component is organized by key reporting tasks.

Chapter 2: “Reporting off SAP Data” shows how to use the Data Access Kit driver to design Crystal reports off the data stored in SAP R/3 or SAP BW. Preliminary instruction on connecting to SAP and selecting a data source are included.

Chapter 3: “Advanced Open SQL Reporting” describes advanced reporting topics associated with the Open SQL driver. These topics include reporting off ABAP functions, and defining and reporting off ABAP data clusters.

Chapter 4: “Reporting off BW’s Multidimensional Data” shows how to report off BW’s OLAP data with the BW OLAP Kit. The chapter covers both the Open OLAP method of reporting in a Seagate Info environment and the direct access method that is available to Crystal Reports users.

Chapter 5: “Viewing SAP Queries as Crystal Reports” provides procedures related to the SAPGUI Integration Kit. This functionality enables report designers to create Crystal report templates for SAP queries. All users can then view SAP queries as Crystal reports from within the SAPGUI (for Windows or for HTML).

For additional information about the Solution Kit for mySAP.com, consult the printed *Installation Guide*, which is also included as a PDF in the \Docs directory of your product CD. The Installation Guide provides administrators with the information they need to deploy each of the Solution Kit for mySAP.com components.

For up-to-date information on known issues and additional Tips and Tricks, search our online Knowledge Base for relevant articles:

<http://support.crystaldecisions.com/library/kbase.asp>

Product registration

Because Crystal Enterprise–Solution Kit for mySAP.com is designed to work with your core Crystal Decisions product (Crystal Enterprise, Crystal Reports, or Seagate Info), you are not required to register the Solution Kit for mySAP.com as a separate product. You should however, register your core product in one of the following ways:

- Fill out the Product Registration form on the Crystal Decisions web site at: <http://www.crystaldecisions.com/register>
- Print the Product Registration form and then fax it to the registration fax number closest to you. Crystal Decisions will then fax you a registration number that can be entered into the product the next time you use it.

Registration fax numbers

USA/Canada +1 (604) 681-5147
United Kingdom +44 (0) 20 8231 0601
Australia +6 2 9955 7682
Germany +49 (0) 69 9509 6182
Hong Kong +852 2893 2727
Singapore +65 777 8786

Registration of your core product (Crystal Enterprise, Crystal Reports, or Seagate Info) is required to access online or telephone technical support. In addition, registering the product ensures that you are kept up-to-date with product advancements.

Technical support

To find out how to receive technical support services on the product you purchased:

- Consult the enclosed Technical Support Guide.
- Go to our support web site at: <http://support.crystaldecisions.com>
- Contact your regional office. Go to: <http://www.crystaldecisions.com/contact/> and locate the one nearest to you.

Document conventions

For easy recognition within procedures, command names, button names, and other pertinent User Interface (UI) features appear in bold type. For example, On the **File** menu, click **New**, and so on.

Letter Gothic font indicates data that you enter using the computer keyboard. For example: Open your browser and go to <http://www.crystaldecisions.com/>

This chapter shows how to connect to SAP from the Report Designer and how to create reports off your SAP data with the Data Access Kit. The chapter also discusses the sample reports and the Report Designer's configuration options.

Overview of the Data Access Kit drivers

The Data Access Kit consists of the Open SQL driver, the combined Info Set/ ABAP Query driver, and the standalone ABAP Query driver. These drivers enable you to design reports off your SAP tables, ABAP functions, ABAP data clusters, ABAP queries, and Info Sets.

The Crystal reports that you create can be refreshed against the current SAP data by any user who has installed the drivers along with the Report Designer. You can also schedule these reports within Seagate Info or Crystal Enterprise, so your users receive customized reports with current data on a regular basis.

This chapter includes the following topics:

- “Connecting to SAP with the Report Designer” on page 6
- “Reporting off tables, views, clusters, and functions” on page 9
- “Reporting off ABAP queries and Info Sets” on page 13
- “Setting up the sample reports” on page 17
- “Pointing existing reports to your production system” on page 18
- “Configuration options” on page 19

For up-to-date information on known issues and additional Tips and Tricks, search our online Knowledge Base for relevant articles:

<http://support.crystaldecisions.com/library/kbase.asp>

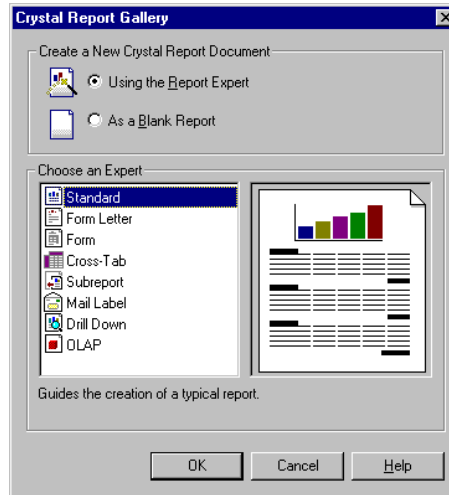
Note: The procedures in this chapter are based on Crystal Reports 8, which parallels the Info Report Designer component of Seagate Info 7.5. If you are using an earlier version of the Report Designer, the dialog boxes may differ. The general concepts, however, remain the same.

Connecting to SAP with the Report Designer

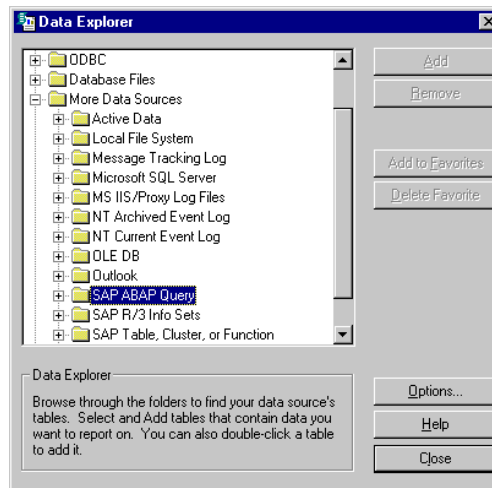
Once you’ve installed the Data Access Kit, you must select the driver for your report. There are two ways to select a driver in the Report Designer: use one of the Report Experts, or select Log On Server from the File or Database menu. Both methods are described below.

Using the Report Experts

- 1 On the **File** menu, click **New**.
The Crystal Report Gallery appears.



- 2 If it's not already selected, click **Using the Report Expert**.
- 3 In the **Choose an Expert** list, click **Standard**; then click **OK**.
Tip: To create a specific type of report, select the appropriate Expert.
- 4 On the Report Expert's **Data** tab, click **Database**.
The Data Explorer appears.



- 5 Expand **More Data Sources** and select the driver that you want to use:
 - To use the Open SQL driver, select “SAP Table, Cluster, or Function.”
 - To use the combined Info Set/ABAP Query driver, select “SAP Info Sets” (for versions 4.6b and later of SAP R/3).
 - To use the standalone ABAP Query driver, select “SAP ABAP Query” (for versions 4.5b and earlier of SAP R/3).

Once you’ve selected a driver, the SAP R/3 Logon dialog box appears. For more details, see [“Logging on to the SAP server” on page 8](#).

Using the Log On Server command

- 1 On the **File** menu (or **Database** menu, if a report is already open), click **Log On/Off Server**.
- 2 In the Data Explorer, expand **More Data Sources** and select the driver that you want to use:
 - To use the Open SQL driver, select “SAP Table, Cluster, or Function.”
 - To use the combined Info Set/ABAP Query driver, select “SAP Info Sets” (for versions 4.6b and later of SAP R/3).
 - To use the standalone ABAP Query driver, select “SAP ABAP Query” (for versions 4.5b and earlier of SAP R/3).

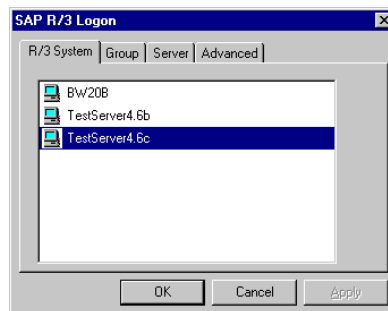
Once you’ve selected a driver, the SAP R/3 Logon dialog box appears. For more details, see [“Logging on to the SAP server” on page 8](#).

Logging on to the SAP server

Regardless of the driver you select, you must specify the SAP system that you want to report off and then provide valid R/3 or BW user credentials for that system. Each driver prompts you for this logon information before it allows you to select the elements that you want to include in the report. Your user credentials are also requested when you run any existing reports built off SAP data sources.

To logon to the SAP server

- 1 Once you’ve selected a data source and a driver, the SAP R/3 Logon dialog box appears.

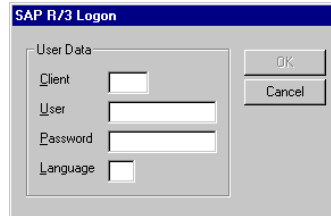


- 2 On the **R/3 System** tab, select the SAP system that you want to report off.

Note: If your SAP administrator has not configured SAP Logon, your SAP system will not appear on the R/3 System tab. In this case, click the Server tab and provide the valid SAP system information. Contact your SAP administrator if you are unsure of the entries that need to be made.

- 3 Click **OK**.

The next SAP R/3 Logon dialog box prompts you for User Data.


 The image shows the 'SAP R/3 Logon' dialog box. It has a title bar with the text 'SAP R/3 Logon'. Inside the dialog, there is a section labeled 'User Data' containing four input fields: 'Client', 'User', 'Password', and 'Language'. To the right of these fields are two buttons: 'OK' and 'Cancel'.

- 4 Type your usual SAP user credentials in the **Client**, **User**, **Password**, and **Language** fields.

- 5 Click **OK**.

The Report Designer logs you onto the SAP system and displays the Allow Reporting On dialog box. Use this dialog box to filter the data that is returned from the SAP system. The appearance of this dialog box changes, depending upon which driver you are using. For details, see [“Selecting tables, views, functions, and clusters” on page 11](#) or [“Reporting off ABAP queries and Info Sets” on page 13](#).

Note: If you can log on to your SAP system but the Allow Reporting On dialog box does not appear, check your Report Designer’s configuration options. For details, see [“Configuration options” on page 19](#).

Reporting off tables, views, clusters, and functions

By writing reports with the Open SQL driver, you gain easy access to SAP’s transparent tables, pool tables, cluster tables, and views. If you are currently involved with the production of ABAP reports, you will find it easy to build reports quickly with this driver.

The Open SQL driver is the most powerful of the three drivers due to the flexibility it provides for accessing data in SAP. This flexibility, however, can result in a higher level of complexity than with the ABAP Query driver or the Info Set driver.

The driver’s advanced functionality allows you to report against ABAP functions and ABAP data clusters. ABAP developers can therefore perform advanced tasks such as reporting against data clusters in HR. Developers can also utilize ABAP to augment report processing. When you are familiar with the general procedures for selecting functions and clusters for your report, see [“Advanced Open SQL Reporting” on page 23](#) for more details.

You may choose to hide some of the complexity of the Open SQL driver for business users who need to build reports quickly. For details, see [“Simplifying the Open SQL driver” on page 42](#).

Objects supported by the Open SQL driver

The Open SQL driver provides access to several low-level objects within SAP: transparent tables, pool and cluster tables, views, and ABAP data clusters and functions.

Transparent tables

This type of database object is similar to the traditional database table. Transparent tables contain the majority of SAP application data from which you can derive Business Intelligence. Most SAP applications use one or more transparent tables to store and retrieve business transactions. You can link these tables to other transparent tables in order to pull information from other application areas of the SAP system.

Pool and cluster tables

Pool and cluster tables are made up of a logical grouping of other database tables. They are primarily used to store application configuration and control information rather than the actual application data. Because these tables are only a logical view of several tables combined, they are accessible only through the Open SQL driver. Native database access will not provide the same view of this data.

Views

A view appears as one table with a list of fields, but actually consists of several tables linked together. Views provide a more abstract view of the data and allow you to build reports without having to worry about linking multiple tables in a report. Views are maintained within SAP and need to be configured before you use them for reporting. For more information on views, see your SAP documentation.

ABAP data clusters and functions

Reporting off ABAP data clusters and functions are advanced topics that usually require some understanding of the ABAP programming language. For details, see [“Advanced Open SQL Reporting” on page 23](#).

Selecting tables, views, functions, and clusters

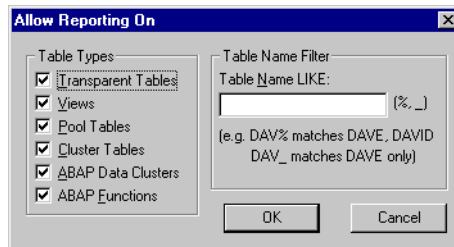
Once you have selected the Open SQL driver and provided valid SAP user credentials, use the Allow Reporting On dialog box to choose the tables, views, functions, or clusters that you want to add to the report. You can filter by the type of table and by the actual table name. Note that, in this situation, table also refers to views, ABAP data clusters, and ABAP functions.

For advanced information on ABAP data clusters and functions, see [“Advanced Open SQL Reporting” on page 23](#).

To select tables, views, functions, and clusters

- 1 Connect to SAP with the Report Designer, select the Open SQL driver, and provide your user credentials. (For details, see [“Connecting to SAP with the Report Designer” on page 6](#).)

The Allow Reporting On dialog box appears.



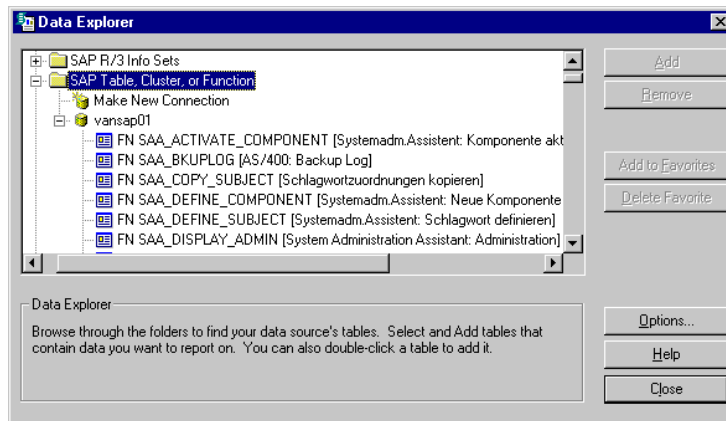
Note: If you log on to your SAP system but the Allow Reporting On dialog box does not appear, check your Report Designer’s configuration options. For details, see [“Configuration options” on page 19](#).

- 2 In the Table Types area, select the type of data sources that you want to search for.
- 3 In the Table Name Filter area, type a filter to select the data sources that you want to make available to the report.

Use the following techniques when selecting tables:

- Type full or partial table name(s).
- Separate distinct table names with commas.
- Add wildcards to select multiple tables: use a percentage sign (%) to denote any number of characters; use an underscore (_) to denote a single character. (The % and _ wildcards correspond respectively to the * and ? wildcards used within Windows.)
- Clear the Table Name field and click OK to proceed without filtering tables. Note, however, that there is a limit to the number of tables that can be displayed in the Data Explorer. If the number of tables in SAP exceeds this limit (which is by default 8000), you may receive an Out of Memory error or a blank Data Explorer.

- 4 When you have specified all the tables that you want to see, click **OK**.
The Data Explorer appears and displays the selected tables, along with the descriptions defined by the SAP administrator.



Tip: To view additional table and database information, right-click any table and, on the shortcut menu, click Properties.

- 5 Double-click the tables that you want to add to the report.

Tip: You can also CTRL-click multiple tables and then click Add.

- 6 When you've selected all of the necessary tables, click **Close**.

If you selected multiple tables for the report, you must provide table-linking information. For more details, see [“Linking tables and views” on page 12](#). If you selected a single table, you can now add fields to the report.

Linking tables and views

Reports based on SAP tables (transparent, pool, and cluster tables, as well as views) behave similarly to reports based on mainstream databases. If you include more than one table or view in a report, you must describe the relationship between the tables by using the Visual Linking Expert in the Report Designer.

Note: Due to the standardized field-naming conventions utilized by SAP, you may find that Smart Linking (in the Visual Linking Expert, or on the Links tab of the Report Expert) generates unnecessary links between tables. To disable Smart Linking, click Options on the File menu. On the Database menu, clear the Auto-SmartLinking option and click OK.

The following client field and language field features are specific to SAP tables.

Client field

Most tables in SAP contain a client field (native field name is MANDT). Because individual SAP systems can be configured to hold data for multiple clients, the client field specifies which rows of data in a table are for which clients. The Open SQL driver handles this configuration automatically. When you connect to SAP, you are prompted to provide your client number: this information eliminates the need to create a selection formula that filters on the client. Also, if a report contains multiple tables, you need not include a link on the client field—this too is handled automatically by the Open SQL driver.

Language field

Some tables in SAP, specifically those that contain text descriptions, have multiple entries—one for each language installed on the SAP system. Consequently, with these tables you must create a selection formula on the Language Key (native field name is SPRAS) and specify the language that you want to display. For example:

```
{table.spras} = "E"
```

For additional help on table-linking and on general report design topics, consult the Online Help or the printed *User's Guide* supplied with your Report Designer.

Reporting off ABAP queries and Info Sets

The combined Info Set/ABAP Query driver allows you to use an existing ABAP query or Info Set (also known as a Functional Area) as a source of data for a Crystal report. The main advantage of this driver is that the ABAP query or Info Set is built within SAP by a content expert, who then makes the data set available to the business user. The user can then design multiple reports by quickly referencing the same query or Info Set.

Another advantage is that an Info Set can be built on top of the logical databases in SAP. This allows the Info Set to inherit all of the business logic and security that is programmed into the logical database. The disadvantage of using this driver is that reports can contain only as much data as the ABAP query or Info Set has been designed to retrieve.

Reports based on ABAP queries and Info Sets behave similarly to reports based on stored procedures in mainstream databases. You can include only one query or Info Set per report; however, you can insert subreports based on different queries or Info Sets into the main report.

Your ABAP queries and Info Sets may contain parameters that you can use to limit the data returned from the SAP system. For example, you might specify a date range to get data for a certain period only. If parameters are included in the ABAP query or Info Set, the Report Designer prompts you to specify the values that you want to include in the query.

Note: The combined Info Set/ABAP Query driver is designed for use with versions 4.6b+ of SAP R/3 (and versions 2.0b+ of SAP BW). If you are reporting against an earlier version of SAP R/3, use the standalone ABAP Query driver to report off ABAP queries. The ABAP Query driver is not installed by default, so you must select it explicitly during a Custom installation.

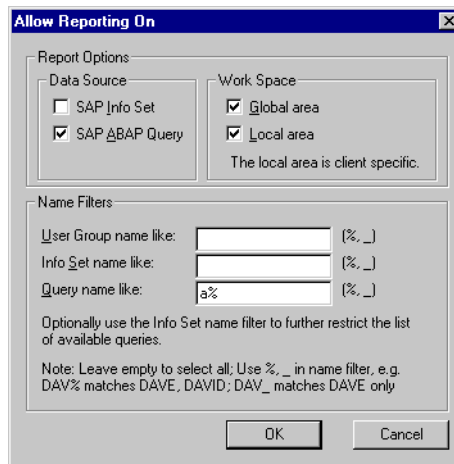
For information on designing ABAP queries and Info Sets, refer to your SAP documentation.

To select an ABAP query or Info Set

Note: Follow this procedure if your R/3 system is version 4.6b or later. For earlier versions of R/3, see [“To select an ABAP query” on page 16](#).

- 1 Connect to SAP with the Report Designer, select the combined Info Set/ABAP Query driver, and provide your user credentials. (For details, see [“Connecting to SAP with the Report Designer” on page 6](#).)

The Allow Reporting On dialog box appears.

The image shows a Windows-style dialog box titled "Allow Reporting On". It has a standard Windows title bar with a close button (X). The dialog is divided into three main sections. The top section, "Report Options", contains two sub-sections: "Data Source" with two checkboxes, "SAP Info Set" (unchecked) and "SAP ABAP Query" (checked); and "Work Space" with two checkboxes, "Global area" (checked) and "Local area" (checked), followed by the text "The local area is client specific." The middle section, "Name Filters", contains three text input fields with labels: "User Group name like:", "Info Set name like:", and "Query name like:". The "Query name like:" field contains the text "a%". To the right of each input field is a small button with a percentage sign and an underline. Below these fields is a paragraph of text: "Optionally use the Info Set name filter to further restrict the list of available queries." At the bottom of the dialog is a "Note" section with the text: "Note: Leave empty to select all: Use %, _ in name filter, e.g. DAV% matches DAVE, DAVID; DAV_ matches DAVE only". At the very bottom are two buttons: "OK" and "Cancel".

Note: If you log on to the SAP system but the Allow Reporting On dialog box does not appear, check your Report Designer’s configuration options. For details, see [“Configuration options” on page 19](#).

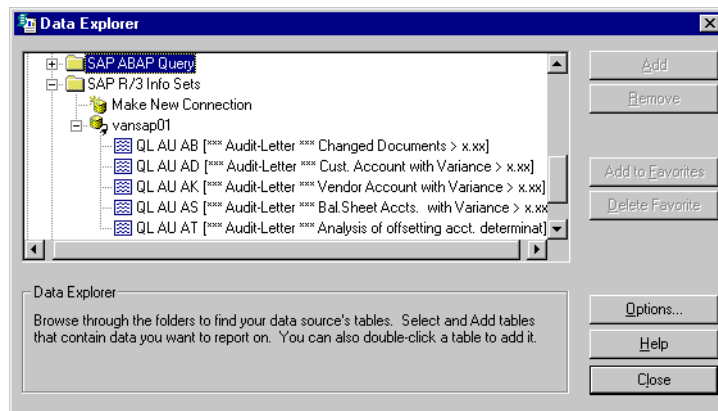
- 2 In the Data Source area, select either **SAP ABAP Query** or **SAP Info Set**.
- 3 In the Work Space area, specify whether you want to search in the **Global area**, the **Local area**, or both.
- 4 In the Name Filters area, use the appropriate text field to specify the data sources that you want to make available to the report.

Use the following techniques when selecting queries or Info Sets:

- Type full or partial names of queries or Info Sets.
- Separate distinct names with commas.
- Add wildcards to select multiple queries or Info Sets: use a percentage sign (%) to denote any number of characters; use an underscore (_) to denote a single character. (The % and _ wildcards correspond respectively to the * and ? wildcards used within Windows.)
- Clear the filter field and click OK to proceed without filtering. Note, however, that there is a limit to the number of objects that can be displayed in the Data Explorer. If the number of queries or Info Sets in SAP exceeds this limit (which is by default 8000), you may receive an Out of Memory error or a blank Data Explorer.

5 When you have specified the data sources that you want to see, click **OK**.

The Data Explorer appears and displays the selected queries or Info Sets, along with the descriptions defined by the SAP administrator.



Tip: Each Info Set also has a G% or L% prefix to indicate whether the Info Set is in the global or local area (it is possible to have two Info Sets with the same name—one in each area). To view additional information, right-click any query or Info Set and, on the shortcut menu, click Properties.

6 Double-click the query or Info Set that you want to add to the report.

If the query or Info Set contains parameters, the Enter Parameter Values dialog box prompts you for information. Use the dialog box to specify the data that you want to include, and then click OK.

7 When you are returned to the Data Explorer, click **Close**.

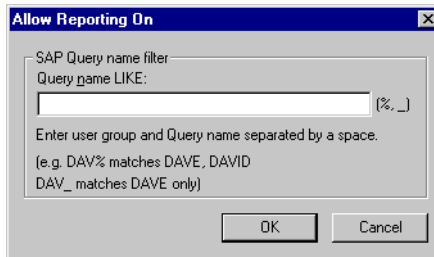
You can now add fields and continue to design your report in the usual manner. For additional information on parameters and on general report design topics, consult the Online Help or the printed *User's Guide* supplied with your Report Designer.

To select an ABAP query

Note: Follow this procedure if your R/3 system is version 4.5b or earlier. For later versions of R/3, see “To select an ABAP query or Info Set” on page 14.

- 1 Connect to SAP with the Report Designer, select the ABAP Query driver, and provide your user credentials. (For details, see “Connecting to SAP with the Report Designer” on page 6.)

The Allow Reporting On dialog box appears.



Note: If you log on to the SAP system but the Allow Reporting On dialog box does not appear, check your Report Designer’s configuration options. For details, see “Configuration options” on page 19.

- 2 Type a filter to select the queries that you want to make available to the report. Use the following techniques when selecting queries:

- Type full or partial names of queries.
- Separate distinct names with commas.
- Separate the user group and query name with a space.
- Add wildcards to select multiple queries: use a percentage sign (%) to denote any number of characters; use an underscore (_) to denote a single character. (The % and _ wildcards correspond respectively to the * and ? wildcards used within Windows.)
- Clear the filter field and click OK to proceed without filtering. Note, however, that there is a limit to the number of objects that can be displayed in the Data Explorer. If the number of queries in SAP exceeds this limit (which is by default 8000), you may receive an Out of Memory error or a blank Data Explorer.

- 3 When you have specified the queries that you want to see, click **OK**.

The Data Explorer appears and displays the selected queries, along with the descriptions defined by the SAP administrator.

Tip: To view additional information, right-click any query and, on the shortcut menu, click Properties.

- 4 Double-click the query that you want to add to the report.

If the query contains parameters, the Enter Parameter Values dialog box prompts you for information. Use the dialog box to specify the data that you want to include, and then click OK.

- 5 When you are returned to the Data Explorer, click **Close**.

You can now add fields and continue to design your report in the usual manner. For additional information on parameters and on general report design topics, consult the Online Help or the printed *User's Guide* supplied with your Report Designer.

Setting up the sample reports

The Data Access Kit includes sample reports that have been saved with SAP data in order to demonstrate some of the ways in which you can use Crystal reports to extract and format your SAP data. By analyzing or modifying these samples, you can create reports that display your SAP data in ways that offer the greatest value to your SAP users.

To analyze the sample reports

- 1 Start the Report Designer and, on the **File** menu, click **Open**.
- 2 Locate the sample reports folder (usually C:\Program Files\Seagate Software\Crystal Enterprise Solution Kit for mySAP.com\Samples\).
Depending on which database drivers you installed, you will see up to three subfolders—ABAP Query Reports, Info Set Reports, and Open SQL Reports. Each subfolder corresponds to a specific Data Access Kit driver.
- 3 Browse the subfolders' contents, select the report that you want to see, and then click **Open**.
The report appears in the Preview tab of the Report Designer.
- 4 Click the **Design** tab see how the sections and groups have been used to create the report's layout.
- 5 Use the Report Designer's other tools—such as the Field Explorer, the Formula Editor, and the Record Selection Formula Editor—to see how the SAP data has been incorporated and utilized in the report.

To refresh the sample reports against your SAP system

Note: Depending on your current SAP configuration, you may or may not retrieve data when you refresh the sample reports against your SAP system.

- 1 Start the Report Designer and, on the **File** menu, click **Open**.
- 2 Locate the sample reports folder (usually C:\Program Files\Seagate Software\Crystal Enterprise Solution Kit for mySAP.com\Samples\).

- 3 Browse the subfolders' contents, select the report that you want to see, and then click **Open**.
The report appears in the Preview tab of the Report Designer.
- 4 On the **Report** menu, click **Refresh Report Data**.
Note: If the report contains parameters, the Refresh Report Data dialog box prompts you to "Use current parameter values" or "Prompt for new parameter values." If you are unfamiliar with report parameters, select "Use current parameter values" and click OK.
- 5 When the first SAP R/3 Logon dialog box prompts you for User Data, click **Cancel**.
The multi-tabbed SAP R/3 Logon dialog box appears.
- 6 On the **R/3 System** tab, select your R/3 system; then click **OK**.
The SAP R/3 Logon dialog box once again prompts you for User Data.
Note: If your SAP administrator has not configured SAP Logon, your SAP system will not appear on the R/3 System tab. In this case, click the Server tab and provide the valid information for your production system. Contact your SAP administrator if you are unsure of the entries that need to be made.
- 7 In the **Client** field, type the number appropriate to your R/3 system.
- 8 Type your usual logon information in the **User Name**, **Password**, and **Language** fields.
- 9 Click **OK**.

The report should now be refreshed with data from your SAP system. However, if no data appears in the report, and you receive no database error messages, then it is likely that the report is using tables and fields that are empty in your SAP system. By editing the report's record selection formula, you may be able to alter the report so that it coincides with your SAP data. To locate the record selection formula, click Report > Edit Selection Formula > Record.

Pointing existing reports to your production system

If you have already designed reports against your R/3 development system, you can quickly modify those reports so they report off the data stored in your R/3 production system. This requires you to set each report's database location so that it points to the production system.

To set the location of a report

- 1 Start the Report Designer and ensure that you don't log on to your SAP system.
- 2 Open the report that you want to modify.

3 On the **Report** menu, click **Refresh Report Data**.

The SAP R/3 Logon box prompts you for User Data, including the Client number of the R/3 development system (the system against which the report was originally designed).

4 Click **Cancel** so as not to log on to the development system.

The multi-tabbed SAP R/3 Logon dialog box appears.

5 On the **R/3 System** tab, select your R/3 production system; then click **OK**.

The SAP R/3 Logon box once again prompts you for User Data.

Note: If your SAP administrator has not configured SAP Logon, your SAP system will not appear on the R/3 System tab. In this case, click the Server tab and provide the valid information for your production system. Contact your SAP administrator if you are unsure of the entries that need to be made.

6 In the **Client** field, type the number appropriate to your R/3 production system.

7 Type your usual logon information in the **User Name**, **Password**, and **Language** fields.

8 Click **OK**.

The report is now refreshed with data from your SAP production system.

9 Save the modified report.

Configuration options

When you install the Data Access Kit, the setup program changes some configuration options of your Report Designer so that it can take advantage of the drivers' advanced features. These global changes affect your default reporting options; therefore, you may notice slightly altered behaviors when you report off data sources other than SAP.

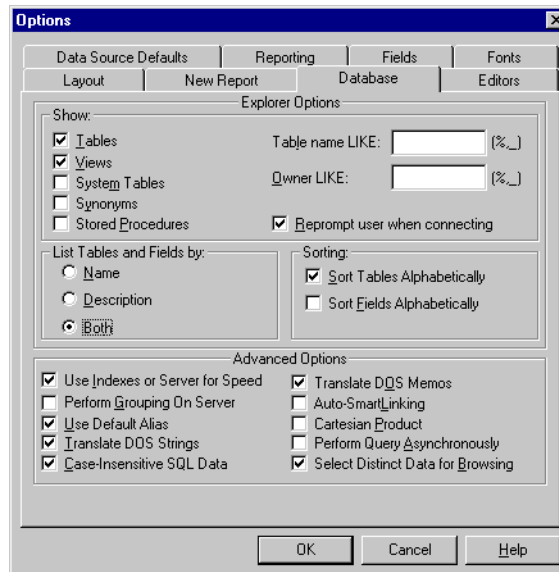
Firstly, the driver installation configures the Report Designer to list tables and fields by both name and description. Secondly, the installation forces the Report Designer to prompt you for information whenever you access a database table. These configuration changes generally improve the experience of reporting off SAP data. Your SAP system may contain thousands of tables, each with a predefined, non-descriptive name. The configuration changes ensure that you can select specific tables for a report without having to search through an immense list. To locate these configuration options in the Report Designer, see ["To view configuration options"](#).

If you are reporting off data sources other than SAP, you may prefer not to be prompted for information every time you connect to the database. If so, clear the "Reprompt user when connecting" option (or the "Prompt on every table" option in version 7 of the Report Designer).

Note: If you are unable to connect to certain SAP tables, or if you cannot view table or field names or descriptions, ensure that these default settings remain selected.

To view configuration options

- 1 Start the Report Designer.
- 2 On the **File** menu, click **Options**.
- 3 In the Options dialog box, click the **Database** tab and note the following changes:
 - In the Explorer Options area, “Reprompt user when connecting” is selected.
 - In the “List Tables and Fields by” area, Both is selected.



Note: This image shows the reporting options available in version 8+ of the Report Designer. If you are using an earlier version of the Report Designer, the changes are as follows:

- On the Database tab, in the “Display database field by” area, Both is selected.
- On the SQL tab, “Prompt on every table” is selected.

This chapter describes some of the advanced tasks related to reporting with the Open SQL driver. These tasks include reporting off ABAP data clusters and functions and using the Cluster Definition tool.

Overview

Advanced functionality in the Open SQL driver allows you to report against ABAP functions and ABAP data clusters. ABAP developers can use these features to perform advanced tasks such as reporting against data clusters in HR. The Cluster Definition tool is provided as part of the server installation for users who need to add, edit, and delete data cluster definitions. Developers can also utilize ABAP to augment report processing.

Advanced users can hide some of the complexity of the Open SQL driver for business users who need to build reports quickly.

This chapter includes the following topics:

- “Reporting off ABAP functions” on page 24
- “Reporting off ABAP data clusters” on page 29
- “Mapping ABAP data clusters” on page 30
- “Simplifying the Open SQL driver” on page 41

Additionally, the Open SQL driver provides the ability to secure the data to which users have access. You can place limitations either on individual tables, or, at a more granular level, on the individual rows within a table. For more information on using the Security Definition Editor to customize your own set of data access authorizations, see “Defining Security for the Data Access Kit” in the *Solution Kit for mySAP.com Installation Guide*.

Reporting off ABAP functions

Reporting off ABAP Functions is an advanced topic that requires an understanding of the ABAP programming language.

While technically not a table, an ABAP function is often used in SAP reporting to provide calculations and to retrieve data that is based on parameters passed into the function (for example, an employee number passed to a function that returns the employee’s address). For this reason, the Open SQL driver provides the ability to call ABAP functions that have defined return types and to display their results. ABAP functions are also useful in situations where complex pre-processing of the data must occur before viewing, or in circumstances where you may wish to further optimize the performance of a query.

How it works

You select a function in the same way as a table. Ensure that ABAP Functions is selected in the Allow Reporting On dialog box; then type the full or partial function name in the Table Name filter area. When you add it to the report, the function appears in the Visual Linking Expert just like a table (assuming there is more than one table or function already added to the report). All the input and output parameters are displayed as fields in the table.

Specify the input parameters either by linking them to another table's fields, or by adding them to a record selection formula. If the output of the function is one or more tables, the "virtual table" consists of rows that are the cross-product of the values in all the tables. If the output of the function is one or more values or structure instances, the "virtual table" consists of a single row containing all the values/structure values.

Limitations

For functions to be used in a report, they must meet two conditions:

- Functions must have defined return types for each of the output parameters.
- Functions must not have whole tables as input parameters.

Note: If a function does not meet the first condition, you can write a "wrapper" function with defined return types, and then call the original function from within the wrapper function.

Finally, the ability to call entire programs is not supported—you may call individual functions only.

Examples

The following examples illustrate the different types of ABAP functions that can be called by the Open SQL driver and show how they appear in the Report Designer.

Functions with values as inputs and outputs

```
Function F
  Importing
    VALUE(NAME) TYPE C
    VALUE(DEPARTMENT) TYPE C
  Exporting
    VALUE(Years_of_service) TYPE I
    VALUE(Age) TYPE I
```

This function would appear as a table called “F” with the following schema:

Field	Type
Name	String
Department	String
Years_of_service	Integer
Age	Integer

The first two fields, Name and Department, are input parameters. You must either link to them from another table (or function), or specify them with a record selection formula (for example, {F.Name} = "Richard").

For example, if table “T” contains departments that are over budget, you can link {T.Department} to {F.Department} and have a record selection formula specifying {F.Name} = "Richard". This formula will get the years of service and age of all people named Richard in departments over budget.

Functions with values as inputs and outputs and in/out (CHANGING) parameters

```
Function F
  IMPORTING
    VALUE(NAME) TYPE C
    VALUE(DEPARTMENT) TYPE C
  EXPORTING
    VALUE(Years_of_service) TYPE I
    VALUE(Age) TYPE I
  CHANGING
    DATEFIELD TYPE D
```

This function would appear as a table called “F” with the following schema:

Field	Type
Name	String
Department	String
Years_of_service	Integer
Age	Integer
DateField_In	Date
DateField_Out	Date

When working with the Name, Department, and DateField_In fields, you must either link them to another table, or specify them in a record selection formula.

For example, if table “T” contains departments that are over budget, you can link {T.Department} to {F.Department} and have a record selection formula specifying {F.Name} = "Richard" and DateField = Date(1999,04,14). This formula will get the years of service, age, and start date of all people named Richard in departments over budget on April 14, 1999.

Functions with structures as inputs and outputs

```
Function F
  IMPORTING
    VALUE(ADDRESS) LIKE S_ADDR STRUCTURE S_ADDR
  EXPORTING
    VALUE(CONTACTINFO) LIKE S_CINFO STRUCTURE S_CINFO
S_CINFO is defined as:
PHONE(20) TYPE C
EMAIL(100) TYPE C
S_ADDR is defined as:
STREET(100) TYPE C
ZIPCODE(6) TYPE N
```

This function would appear as a table called “F” with the following schema:

Field	Type
Address.street	String
Address.zipcode	Integer
ContactInfo.Phone	String
ContactInfo.email	String

As before, you must either link the street and zip code fields to or from another table, or define them in a record selection formula.

Functions with a table as their output

```
Function F
  IMPORTING
    VALUE(NAME) TYPE C
  EXPORTING
    VALUE(GENDER) TYPE C
TABLES
POSITIONS STRUCTURE S_POSN
S_POSN is defined as:
TITLE(20) TYPE C
STARTDATE TYPE D
```

In this case, the function takes a name as an argument and returns the age and position of that person. Suppose that Tom's gender is male, and that the Positions table returned by F for Tom contains:

Title	StartDate
Mail Clerk	1/1/93
Manager, Mail	3/4/95
VP, Mail	7/12/98

When the function is called, the result will be a table called "F" that contains:

Name	Gender	Positions.Title	Positions.StartDate
Tom	M	Mail Clerk	1/1/93
Tom	M	Manager, Mail	3/4/95
Tom	M	VP, Mail	7/12/98

Functions with multiple tables as their output

```
Function F
  IMPORTING
    VALUE(NAME) TYPE C
  EXPORTING
    VALUE(GENDER) TYPE C
  TABLES
    POSITIONS STRUCTURE S_POSN
    OPTIONS STRUCTURE S_OPTN
  S_POSN is defined as before and S_OPTN is defined as:
  GRANTDATE TYPE D
  NUMBER TYPE I
```

Suppose that the data from Positions is as before, and the Options table looks like:

GrantDate	Number
4/4/93	1000
5/6/97	15300

When the function is called, the result will be a table called "F" that contains:

Name	Gender	Positions.Title	Positions.StartDate	Options.GrantDate	Options.Number
Tom	M	Mail Clerk	1/1/93	4/4/93	1000
Tom	M	Manager, Mail	3/4/95	4/4/93	1000
Tom	M	VP, Mail	7/12/98	4/4/93	1000

Name	Gender	Positions.Title	Positions.StartDate	Options.GrantDate	Options.Number
Tom	M	Mail Clerk	1/1/93	5/6/97	15300
Tom	M	Manager, Mail	3/4/95	5/6/97	15300
Tom	M	VP, Mail	7/12/98	5/6/97	15300

Reporting off ABAP data clusters

Reporting off ABAP data clusters is an advanced topic that requires an understanding of the ABAP programming language.

What is a data cluster?

Unlike most of the SAP system, the Human Resources module stores much of its data in ABAP data clusters, rather than in data dictionary tables such as transparent, pool, or cluster tables. Data clusters are actually stored in some transparent tables. Any such transparent table can contain many different types of clusters. Each cluster of data is stored in one or more rows in the transparent table. A cluster can contain any number of individual components or pieces of data, which may range from single values to structures to tables.

You can access a data cluster in an ABAP program by running the ABAP command `IMPORT`. This command takes parameters—such as cluster database name, cluster ID, and so on—as well as a list of pieces of data to import. The `IMPORT` command also copies the contents of the data cluster into local variables within the calling code. A typical transparent table that contains cluster data has a structure similar to the following:

client	area	key	line counter	user data	data length	data cluster
--------	------	-----	--------------	-----------	-------------	--------------

The combination of transparent table name and area identifies which type of cluster to import, while the key identifies the specific cluster. For HR, the cluster key is typically some combination of personnel number and something else. The key is stored in a single text field, but may actually represent more than one logical key field (for example, personnel number + a sequence number for HR Payroll data).

How it works

The difficulty in working with clusters from a generic, relational data access point of view is that the definition of the clusters is not stored in a repository such as the ABAP dictionary (unlike the definitions of transparent, pool, and cluster tables, for instance). Furthermore, the format of these clusters may change from site to site due to customizations. Finally, it is fundamentally difficult to map these as tables in the relational sense because, although the data represented is relational, it is stored in independent clusters in an almost hierarchical form.

In order to overcome these issues, the individual components of data clusters must be mapped as tables. You can do this by creating a dictionary of the clusters on a particular SAP system. The dictionary can then be accessed by the Open SQL driver. To build this dictionary, use the Cluster Definition tool, which was installed by your administrator with the Solution Kit for mySAP.com transport files.

Mapping ABAP data clusters

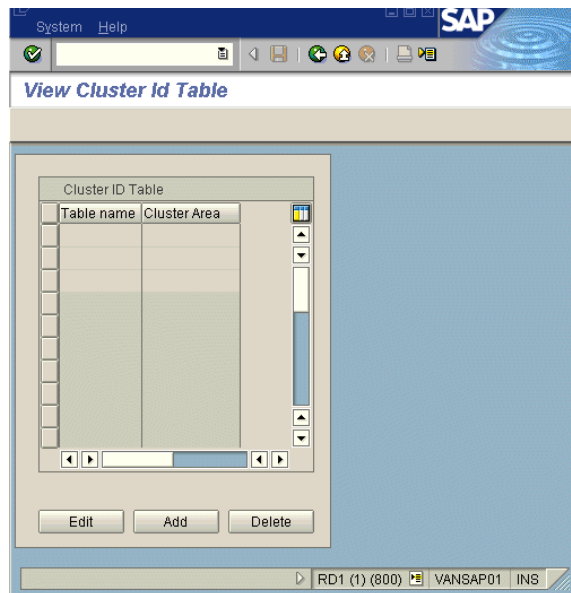
The Cluster Definition tool (transaction ZCDD) enables you to create a dictionary of the data clusters on your SAP system. Once you've added a data cluster to the dictionary, you can select the cluster in the Report Designer and report off its data with the Open SQL driver. You will usually require prior experience with ABAP programming, because you need to find the cluster definitions within R/3 before you enter them with the Cluster Definition tool.

Combined, the following procedures show how to map the SALDO table (Time balances per period) to your dictionary of data clusters with the Cluster Definition tool. The SALDO table is located in the B2 (PDC Data (Month)) cluster area of the ABAP data cluster that is stored in the PCL2 (HR cluster 2) transparent table. In this case, PCL2 is the cluster database, B2 is the cluster area or type, and SALDO is the table. The procedures described in this example correspond to SAP R/3 4.6b.

To create a new cluster entry in the dictionary

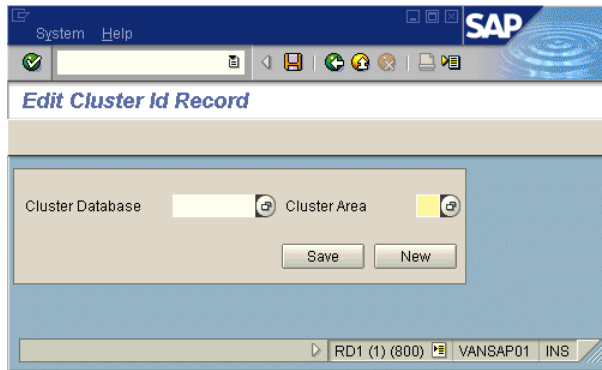
- 1 From the SAPGUI, execute transaction ZCDD.

The Cluster Definition tool displays its “View Cluster Id Table” screen.



- 2 Click **Add** to create a new entry.

The Edit Cluster ID Record screen appears.



- 3 In the **Cluster Database** field, type the name of the table in which the ABAP data cluster is stored.

For this example, type PCL2.

Note: To find out which transparent table contains a required ABAP data cluster, ask a subject matter expert about the module you are working on. Or, if you are trying to locate the data from a particular program (such as an SAP report like RPC11XE0), look for the table in the ABAP code. When you find the table, look at the data in the RELID field for a list of cluster areas.

- 4 In the **Cluster Area** field, type the name of the cluster area or RELID.

For this example, type B2.

- 5 Click **Save** and exit the Cluster Definition tool.

You now need to find the key to the cluster area. Specifically, you need the name of the dictionary structure or table in which the key fields are stored, and you need the names of those key fields. There are several ways to find this information within SAP. This example uses the Object Navigator to locate the key information for the B2 cluster area.

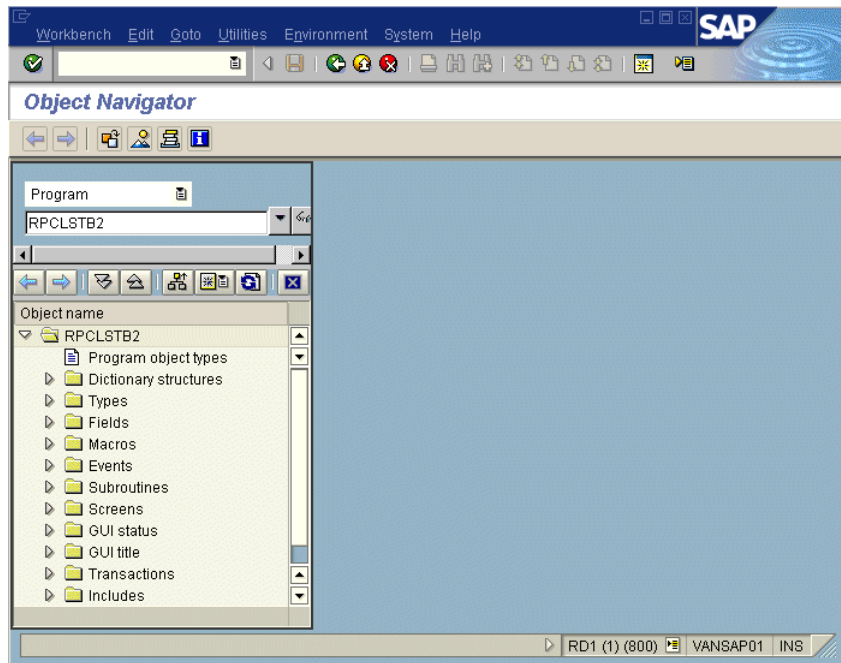
To locate the cluster area's key fields

- 1 Execute transaction SE80 to access the Object Navigator.
- 2 Select **Program** from the list and type the name of the program that holds the key information related to the cluster area.

For this example, type RPCLSTB2, which is the program that holds the key information for the B2 cluster area.

3 Press Enter.

The Object Navigator displays the information for the specified program.

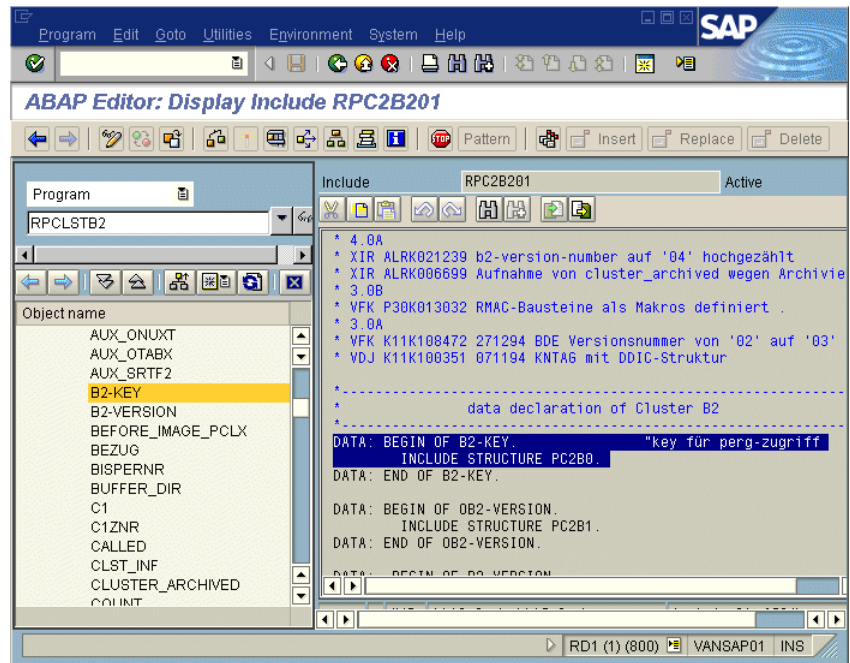


4 In the **Object name** list, expand the **Fields** folder.

5 Double-click the entry that corresponds to your cluster area's key.

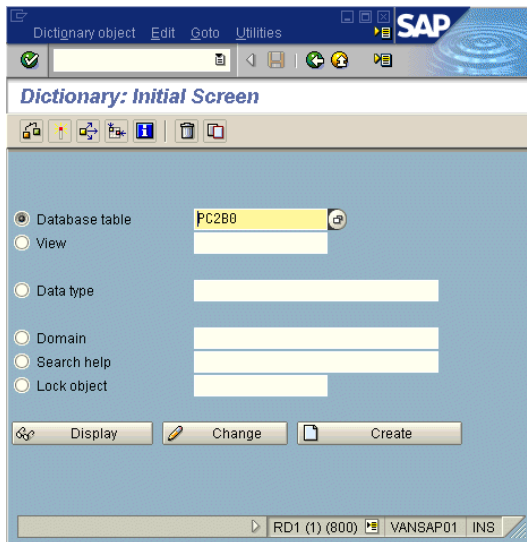
For this example, double-click the B2-Key entry.

The relevant ABAP code is displayed.



- 6 In the ABAP code, look for the heading that denotes the beginning of the cluster area's key, and note the structure that is included in the following line. For this example, look under the heading `DATA: BEGIN OF B2-KEY` for the line `INCLUDE STRUCTURE PC2B0` (highlighted in the image above). This shows that the PC2B0 structure contains the fields of the key.
Now that you've located the name of the structure that holds the key fields, you need to determine the names of those key fields.
- 7 Create a new session in R/3 and execute transaction SE11 to access the ABAP/4 Dictionary.

The Dictionary: Initial Screen appears.

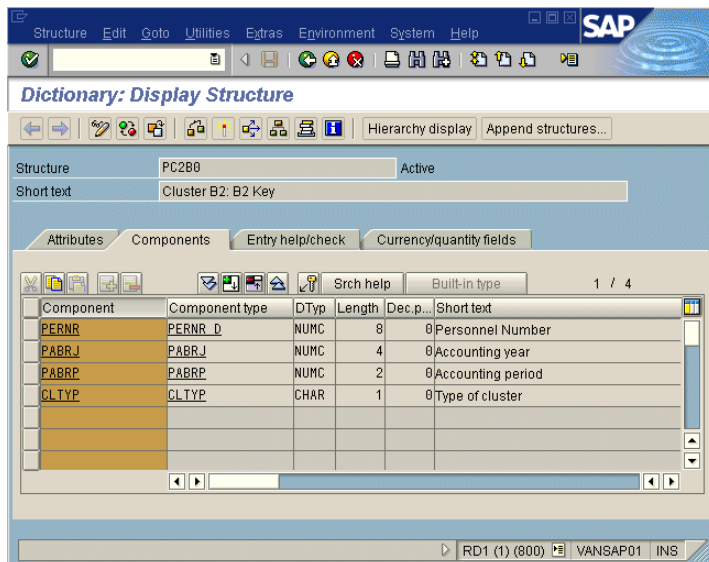


- 8 Select **Database table** and type the name of the structure that contains the key fields.

For this example, type PC2B0.

- 9 Click **Display**.

The Display Structure screen appears.



- 10 Make a note of the names of the key fields displayed in the **Component** column.

In this case, the four key fields are PERNR, PABRJ, PABRP, CLTYP.

You now need to add the key fields to your new dictionary entry in the Cluster Definition tool. Here, you will add the four key fields to the dictionary entry that you created for the B2 cluster area.

To add the key fields to the dictionary entry

- 1 Execute transaction ZCDD to return to the Cluster Definition tool.
- 2 In the View Cluster Id Table screen, select the new entry that you created. For this example, select the PCL2 B2 entry.
- 3 Click **Edit**.

The View Cluster Record screen appears.

View Cluster Record

Cluster Database: PCL2 Cluster Area: B2 Edit New Delete

Cluster Key Definition

Key Num	Key Name	Reference Table	Reference Field	Data Type	Data Length

Edit Cluster Key New Cluster Key Delete Cluster Key

Cluster Data Definition

Display Name	Piece Name	Class	Ref Table	Ref Field	Data Type	Data Length

Ref Field

Edit Cluster Data New Cluster Data Delete Cluster Data

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- 4 Click **New Cluster Key**.

The Edit Cluster Key Record screen appears.

- 5 In the **Key Number** field, type the sequence number of the key field that you want to specify.
For this example, type 001 (this is the first entry for this cluster area's key).
- 6 In the **Key Name** field, type the name that you want to appear when you use this key field in the Report Designer.
For this example, type K_PERNR.
Tip: In general, follow a naming convention. For instance, start a key field name with K_ to specify it as a key field, as has been done here.
- 7 Use the **Reference Table** field to define the key field's data type by referencing an existing field of the same type in another table.
For this example, type PC2B0, because it is the name of the structure that holds the Reference Field.
- 8 In the **Reference Field** field, type the name of the field to which you want to refer. This field must exist in the Reference Table.
For this example, type PERNR.
Note: If the key field is not already defined in the data dictionary, and if you do not define it by referencing an existing field, you can manually specify the ABAP type and Length in order to define the key field's data type. In this example, the key field is defined by reference, so you can ignore the ABAP type and Length fields.
- 9 Click **Save**; then click **Back** to return to the View Cluster Record screen.
- 10 Repeat steps 4 to 9 for each field in the key. In the **Key Number** field, be sure to increment the sequence number by one every time you define a new key field for this cluster area.

The values for each field in this example are:

Key Number	Key Name	Reference Table	Reference Field
002	PABRJ	PC2B0	PABRJ
003	PABRP	PC2B0	PABRP
004	CLTYP	PC2B0	CLTYP

Once you have entered all of the definitions, the View Cluster Record screen looks like this.

View Cluster Record

Cluster Database: PCL2 Cluster Area: B2 Edit New Delete

Cluster Key Definition

Key Num	Key Name	Reference Table	Reference Field	Data Type	Data Length
1	PERNR	PC2B0	PERNR		0
2	PABRJ	PC2B0	PABRJ		0
3	PABRP	PC2B0	PABRP		0
4	CLTYP	PC2B0	CLTYP		0

Edit Cluster Key New Cluster Key Delete Cluster Key

Cluster Data Definition

Display Name	Piece Name	Class	Ref Table	Ref Field	Data Type	Data Length

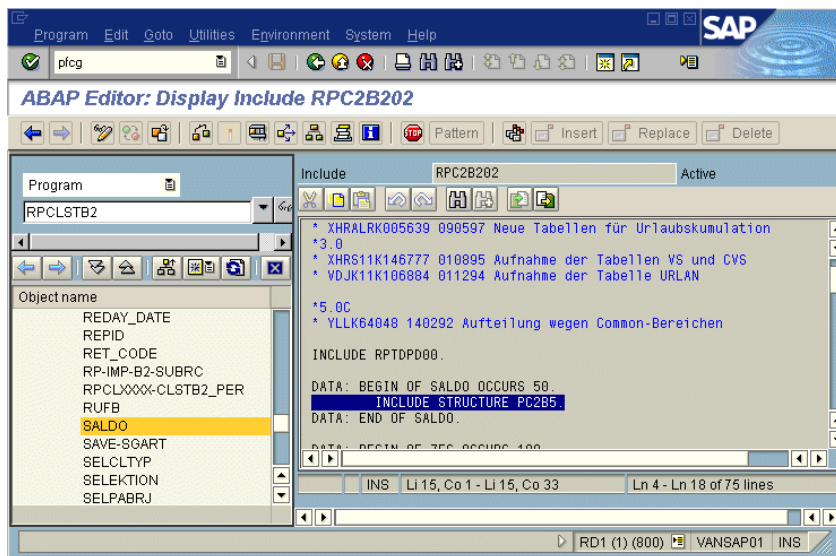
Edit Cluster Data New Cluster Data Delete Cluster Data

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Now you need to determine the structure of the table that you want to access. In this example, the table in question is SALDO. There are several ways to determine the SALDO table's structure within SAP. This example again uses the Object Navigator to locate the required information about the SALDO table.

To determine the structure of the cluster table

- 1 Execute transaction SE80 to return to the Object Navigator.
- 2 Select **Program** from the list and type the name of the program that holds the key information related to the cluster area.
For this example, type RPCLSTB2, which is the program that holds the key information for the B2 cluster area and its SALDO table.
- 3 In the **Object name** list, expand the **Fields** folder.
- 4 Double-click the entry that corresponds to the table that you want to access.
For this example, double-click the SALDO entry.
The relevant ABAP code is displayed.



- 5 In the ABAP code, look for the heading that denotes the beginning of the table, and note the structure that is included in the following line.
For this example, look under the heading DATA: BEGIN OF SALDO OCCURS 50 for the line INCLUDE STRUCTURE PC2B5 (highlighted in the image above). This shows that the PC2B5 structure defines the fields of the SALDO table.

Now that you've determined which structure defines the fields of the table you want to report off, you must add this information to your new dictionary entry.

To add the table to the dictionary entry

- 1 Execute transaction ZCDD to return to the Cluster Definition tool.
- 2 In the View Cluster Id Table screen, select your new entry.
For this example, select the PCL2 B2 entry.
- 3 Click **Edit**.
- 4 In the View Cluster Record screen, click **New Cluster Data**.
The Edit Cluster Data Record screen appears.

- 5 In the **Piece Name** field, type the name of the table as it appears in the cluster area.
For this example, type SALD0.
- 6 In the **Display Name** field, type the name of the table as you want it to appear in the Report Designer.
For this example, type B2SALD0.
Tip: In general, use a naming convention. For instance, combine the table name with the name of the cluster area, as has been done here (in case there is another SALDO table in a different cluster area).
- 7 In the **Piece Class** field, type the abbreviation appropriate to the data piece: (T)able, (S)tructure, or (B)asic type.
For this example, type T.
- 8 Use the **Reference Table** field to define the structure of the new data piece by referencing an existing structure of the same type in another table.
For this example, type PC2B5.

Note: In this example, you need not complete the remaining fields (Reference Field, ABAP Type, and Length). Use these fields to add specific information if the structure of the table is not defined in the data dictionary.

- 9 Click **Save**; then click **Back** to return to the View Cluster Record screen.

Now that you have entered all of the definitions, you have finished creating your new dictionary entry in the Cluster Definition tool. The View Cluster Record screen looks like this.

View Cluster Record

[Cluster Database]: PCL2 Cluster Area B2 Edit New Delete

Cluster Key Definition

Key Num	Key Name	Reference Table	Reference Field	Data Type	Data Length
1	PERNR	PC2B0	PERNR		0
2	PABRJ	PC2B0	PABRJ		0
3	PABRP	PC2B0	PABRP		0
4	CLTYP	PC2B0	CLTYP		0

Edit Cluster Key New Cluster Key Delete Cluster Key

Cluster Data Definition

Display Name	Piece Name	Class	Ref Table	Ref Field	Data Type	Data Length
B2SALD0	SALD0	T	PC2B5			0

Edit Cluster Data New Cluster Data Delete Cluster Data

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When you create a new report with the Open SQL driver, you can report off your customized ABAP data cluster by searching for the table named B2SALDO.

Although it takes some time to define each data cluster, keep in mind that once the definition is complete all users can access the cluster—regardless of whether or not they have ABAP experience.

Simplifying the Open SQL driver

The standard SAP system has thousands of tables to which the Open SQL driver provides access. Finding the data is the first challenge when building a report. ABAP reporting usually requires a content specialist to identify where in the SAP system the reportable data resides.

The Open SQL driver is a powerful driver packed with a large number of features. While some of these features require ABAP programming knowledge or knowledge of the SAP authorization model, it is possible for business users to make use of these features as well. The following are some tips for simplifying the usability of this driver.

Using Info Views and Crystal Dictionaries

Info Views and Crystal Dictionaries are structured and simplified views of data that you can provide to individuals who are designing reports with the Open SQL driver.

Info Views and Crystal Dictionaries allow you to:

- Design a single, dynamic view of all the data that is necessary to create organizational reports and queries.
- Organize the data and rename tables and fields to make it easier for users to understand the content and purpose of the data.
- Create complex data-manipulation formulas that users can access without needing to understand formula concepts.
- Reduce support cost and time, increase user productivity, and reduce data misuse, loss, and damage.

If you are an administrator who is distributing the Open SQL driver to multiple users, you can use Info Views or Crystal Dictionaries to enhance and streamline users' reporting experience:

- When you design Info Views and Crystal Dictionaries in accordance with specific reporting tasks, your users can quickly and easily access the SAP data they need by building reports off the appropriate view.
- When you utilize the Column Security and Row Security features of Info Views and Crystal Dictionaries, you gain the ability to create a single view that can be distributed to users with varying data-access permissions.

Alternatively, if you are a report design expert, you can create a selection of task-oriented Info Views or Crystal Dictionaries in order to enhance your ability to design new reports quickly. For instance, you could customize a view of your organization's sales data, a view of the HR data, and a view of the expense data. Then, when you need to design a new HR report, or a new sales report, you select the predefined view as the data source for your report.

For more information on creating Info Views, consult the Online Help supplied with the Info View Designer component of Seagate Info. For more information on creating Crystal Dictionaries, consult the Online Help or *User's Guide* supplied with Crystal Reports.

Clusters and security

The configuration of the cluster and security definitions can be time consuming, depending on how much HR reporting needs to be done, and how tight the security of the system needs to be. However, this usually needs to be done only once. When the customization of an SAP system is complete, the definition of data clusters does not change, and it is unlikely that the checks that need to be performed against a table will change frequently.

For information on defining clusters, see [“Mapping ABAP data clusters” on page 30](#). For instructions on customizing security definitions, see the sections pertaining to the Security Definition Editor in the *Solution Kit for mySAP.com Installation Guide*.

Reporting off BW's Multidimensional Data⁴

This chapter shows how to analyze and report off the multidimensional data stored in the Info Query Cubes that reside in your SAP Business Information Warehouse.

Overview of the BW OLAP Kit

The BW OLAP Kit has been specially designed to integrate the Online Analytical Processing (OLAP) capabilities of Seagate Info with your SAP Business Information Warehouse (BW). However, the BW OLAP Kit is also available to Crystal Reports users who do not have access to a Seagate Info environment.

The BW OLAP Kit provides two general ways to analyze and report off the multidimensional data stored in BW's Info Query Cubes. The method that is available to you depends upon the way your SAP administrator has set up your reporting environment:

- Open OLAP reporting with Seagate Info
- Direct access to BW's Info Query Cubes

Regardless of the method you use, each Info Query Cube's "Release for OLE DB for OLAP" property must be enabled.

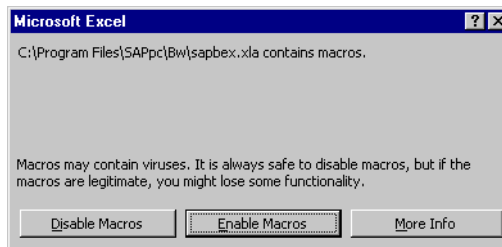
Releasing cubes for OLE DB for OLAP

In order to make an Info Query Cube available to Seagate Info or Crystal Reports users, you or your administrator must first enable the cube's "Release for OLE DB for OLAP" property from within the SAP Business Explorer Analyzer.

To release a cube for OLE DB for OLAP

Note: This example uses the SAP Business Explorer Analyzer for BW 2.0B.

- 1 Start the SAP Business Explorer Analyzer.
- 2 If prompted by Microsoft Excel, click **Enable Macros**.



- 3 On the SAP Business Explorer toolbar, click **Tools** and, on the submenu, click **Edit queries (global definition)**.



- 4 If prompted by the SAP Logon dialog box, double-click your BW server and enter your login information.
- 5 In the "Define the query" dialog box, click **Open query** on the toolbar.

- 6 In the Open Query dialog box, select the Info Query Cube that you want to make available to users; then click **OK**.
- 7 When the query definition appears, click **Query properties** on the toolbar.
- 8 In the "Query properties" dialog box, select the **Release for OLE DB for OLAP** option; then click **OK**.




- 9 On the toolbar, click **Save query**; then click **Exit**.

SAP BW now exposes the Info Query Cube using the OLE DB for OLAP interface. This allows Seagate Info and Crystal Reports users to analyze and report off the cube's multidimensional data.

Open OLAP reporting with Seagate Info

If your administrator has integrated the BW OLAP Kit with your Seagate Info reporting environment, you can analyze and report off BW's Info Query Cubes from your Info Desktop. This functionality utilizes Seagate Info's Open OLAP technology to provide you with quick access to BW's Info Query Cubes.

The following sections cover the key topics:

- "Adding BW's Info Query Cubes to the Info Desktop" on page 44
- "Analyzing cubes from the Info Desktop for Windows" on page 48
- "Generating Crystal reports from Info Query Cubes" on page 49
- "Analyzing cubes with the Info Desktop for Java" on page 49

Adding BW's Info Query Cubes to the Info Desktop

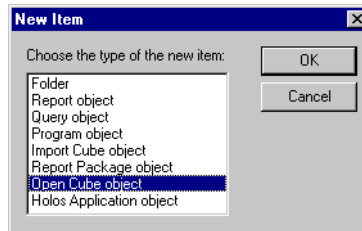
The Info Query Cube's "Release for OLE DB for OLAP" property must be enabled before you complete this procedure. For details, see "[Releasing cubes for OLE DB for OLAP](#)" on page 42.

To add an Info Query Cube to the Info Desktop

1 Start the Info Desktop for Windows.

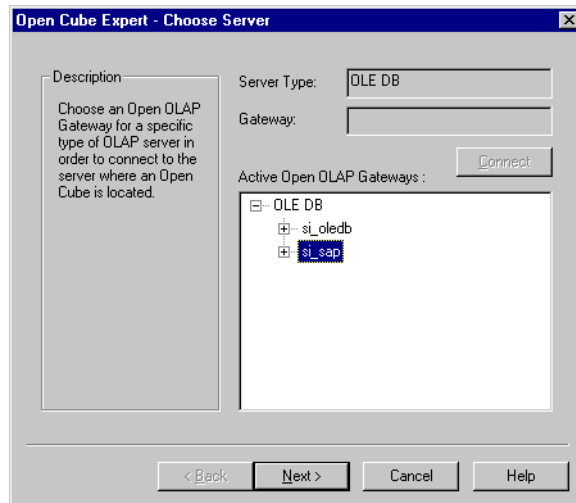
2 On the **File** menu, click **New**.

The New Item dialog box appears.



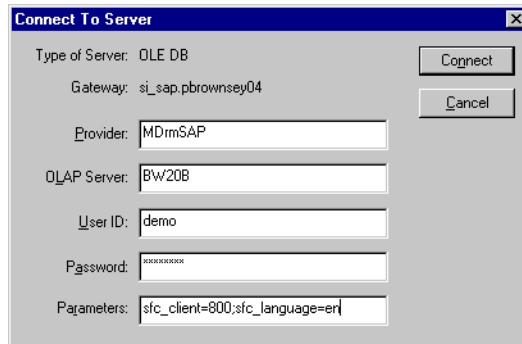
3 Double-click **Open Cube object**.

The Open Cube Expert starts and displays its Choose Server dialog box.



- 4 In the **Active Open OLAP Gateways** list, expand **OLE DB**; then expand **si_sap**.
- 5 Select the machine name of the Open OLAP Gateway that your administrator has configured for BW connectivity; then click **Connect**.

The Connect To Server dialog box appears.



- 6 In the **Provider** field, type MDrmSap.
- 7 In the **OLAP Server** field, type the information that appears in the Description field of your BW server's Properties screen.

Note: To locate the required information about your BW server, start the SAP Logon screen, select your BW server from the list, and click Properties. The Report Designer's logon fields are case-sensitive, so the entries must match exactly.

- 8 In the **User ID** and **Password** fields, type your SAP user credentials.
- 9 In the **Parameters** field, provide your SAP client number and your default SAP logon language as follows:

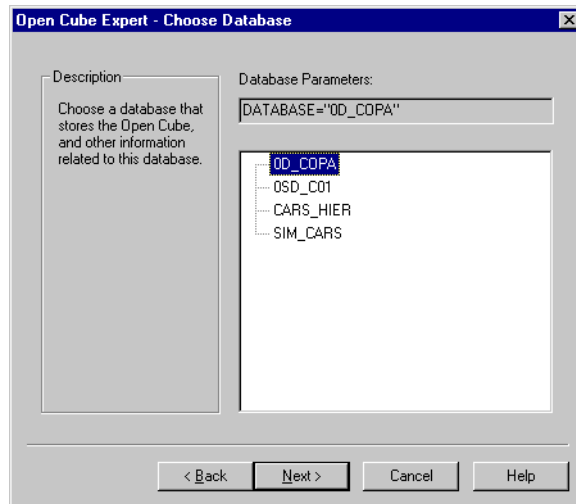
sfc_client=x;sfc_language=y

For instance, if your usual SAP client number is 800, and your default language is English, you type:

sfc_client=800;sfc_language=en

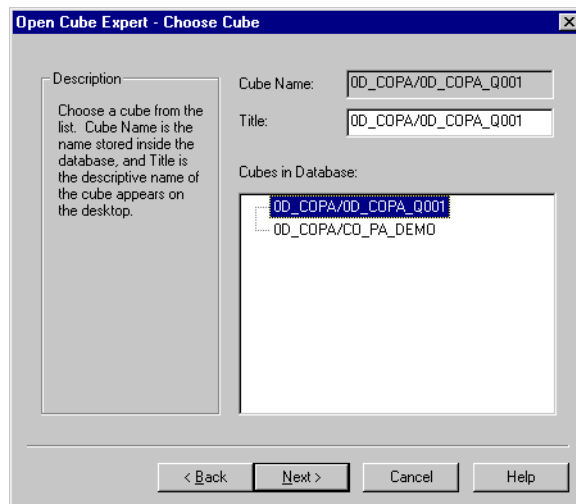
- 10 Click **Connect**.
- 11 When you are returned to the Choose Server dialog box, click **Next**.

The Choose Database dialog box appears.



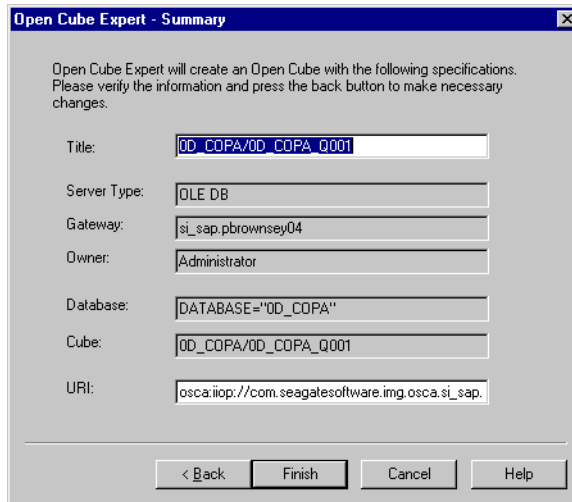
- 12** Select the Info Cube that stores the Info Query Cube that you want to add to the Info Desktop; then click **Next**.

The Choose Cube dialog box appears.



- 13** Select the desired Info Query Cube; then click **Next**.

The Summary dialog box appears.



Open Cube Expert will create an Open Cube with the following specifications. Please verify the information and press the back button to make necessary changes.

Title:

Server Type:

Gateway:

Owner:

Database:

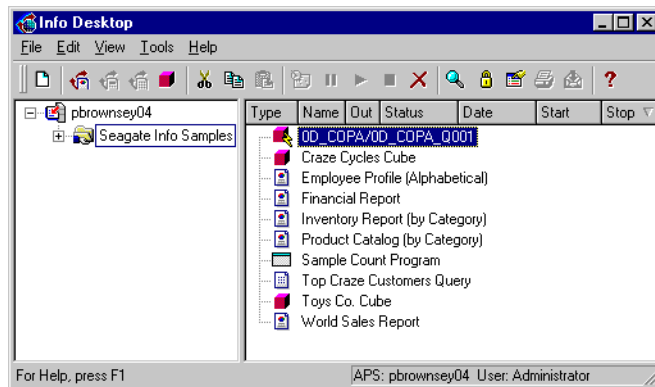
Cube:

URI:

< Back Finish Cancel Help

14 When you've verified the cube information, click **Finish**.

You are returned to the Info Desktop, which displays the new cube object.



Seagate Info users can now analyze and report off this Info Query Cube through the Info Desktop (for Windows or for Java). However, because the Info Query Cube is treated as an Open OLAP Cube, users can neither schedule it for regular processing nor modify its design from the Info Desktop. Users can, however, generate Crystal reports based on the cube object, and then schedule those reports for regular processing against the Info Query Cube. For details, see [“Generating Crystal reports from Info Query Cubes”](#) on page 49.

For more information on Open OLAP technology, consult the *Solution Kit for mySAP.com Installation Guide* and your Seagate Info documentation.

Analyzing cubes from the Info Desktop for Windows

If you have installed the Info Desktop client software, use it to connect to and analyze the Info Query Cubes that have been added to the Seagate Info system.

Note: If you usually connect to your Seagate Info system over the Web, see “Analyzing cubes with the Info Desktop for Java” on page 49.

To analyze Info Query Cubes

- 1 Start the Info Desktop.
- 2 Locate the Info Query Cube that you want to analyze.
- 3 On the **View** menu, click **View**.

The Info Worksheet opens and displays the initial view of the cube data.

The screenshot shows the 'Info Worksheet - [Default View] : OSD_C01/SALES_ANALYSIS' window. It features a menu bar (File, Edit, View, Format, Data, Tools, Window, Help), a toolbar with various icons, and a status bar at the bottom that says 'Ready'. The main area displays a table with columns for months from February 1996 to February 1997. The rows list various divisions and their sales figures. At the bottom, there are four filter buttons: 'Sales organization' (set to 'All Sales organization'), 'Sold-to party' (set to 'All Sold-to party'), 'Material' (set to 'All Material'), and 'Key figures' (set to 'Sales Volume').

Division	FEB 1996	MAR 1996	APR 1996	JUL 1996	AUG 1996	JAN 1997	FEB 1997
Cross-division							
Pumps	2,245.00	0.00	0.00	0.00		1,655,500	3,182,25
Motorcycles				0.00			
Paints				0.00			
Lighting						679,900.00	457,800.0
Foods					0.00		
High Tech					0.00	1,713,925	631,643.0
Service						170,583.87	170,600.0
Vehicles							
Retail							
All Division	2,245.00	0.00	0.00	0.00	0.00	4,219,909	4,442,35

Now use the Info Worksheet’s powerful features to arrange, analyze, and format the cube’s multidimensional data. For full details on the Info Worksheet, consult your Seagate Info documentation.

To save the current Worksheet view

- 1 On the **File** menu, click **Save View As**.
- 2 In the Save View As dialog box, type a name for the Worksheet view.
- 3 Click **OK**.

You can now open this view of the data the next time you connect to the Info Query Cube with the Info Worksheet.

To open a saved Worksheet view

- 1 On the **File** menu, click **Open**.
- 2 In the Select View dialog box, select from the list of saved Worksheet views.
- 3 Click **OK**.
The Info Worksheet arranges the cube data in accordance with the view that you selected.

Generating Crystal reports from Info Query Cubes

Once you've used the Info Worksheet for Windows to create an informative view of the cube's multidimensional data, you can quickly generate a Crystal report that displays this information.

Note: To obtain this functionality, you must be running the Info Desktop for Windows, and you must have the Info Report Designer installed locally.

To create a report from a Worksheet view

- 1 On the **File** menu, click **Save View As**.
- 2 In the Save View As dialog box, type a name for the Worksheet view.
- 3 Click **OK**.
- 4 On the **Tools** menu, click **Generate Report**.
The Info Report Designer opens automatically, generates an OLAP report, and displays the OLAP grid in the Preview tab. Use the Info Report Designer to format and modify this report as you would any other OLAP report. You can also save the report to the Info APS and schedule it for regular processing within the Seagate Info system.

Analyzing cubes with the Info Desktop for Java

If your administrator has enabled Seagate Info WebAccess functionality, you can connect to and analyze Info Query Cubes over the Web.

Note: If you have the Info Desktop for Windows installed locally, see ["Analyzing cubes from the Info Desktop for Windows" on page 48](#).

To analyze cubes over the Web

- 1 Open a browser window and go to `http://webserver/ciweb` (where *webserver* is the name of the machine that is running the Seagate Info WebAccess components).
- 2 Click **Info Desktop for Java**.

The Info Desktop for Java logon applet appears.



- 3 In the **User Name** and **Password** fields, provide your usual Seagate Info credentials.
- 4 If the **APS** field is blank, or if you want to connect to a different Info APS, type the name of the appropriate machine.
- 5 Click **Connect**.
- 6 When the Info Desktop for Java appears, locate the Info Query Cube whose data you want to analyze.
- 7 Select the cube and, on the **View** menu, click **View output**.

Note: If a Security Warning asks you whether or not to install and run the Java Worksheet, click Yes.

The Info Worksheet Java applet loads and retrieves the Info Query Cube's structure and data. Depending on the size of the cube and the current network load, this may take a few minutes.

Now use the Info Worksheet's powerful features to arrange and analyze the cube's multidimensional data. For full details on the Info Worksheet for Java, consult your Seagate Info documentation.

Direct access to BW's Info Query Cubes

If you do not have access to a Seagate Info reporting environment, or if your administrator has not set up the Open OLAP components, you can connect directly to BW's Info Query Cubes using your Report Designer. However, the BW OLAP Kit must be installed on your local machine. For complete details, see the *Solution Kit for mySAP.com Installation Guide*.

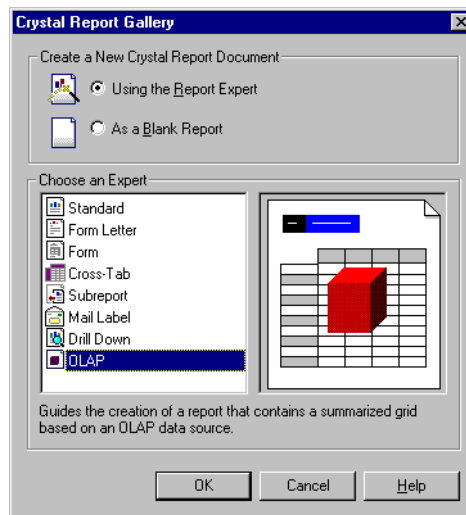
Reporting directly off Info Query Cubes

To connect to the Info Query Cubes stored in BW, you must provide your usual BW logon information in the Connect to Server dialog box. The following procedure shows how to report off an Info Query Cube using your Report Designer's OLAP Report Expert.

If your administrator has not already done so, you must first enable each Info Query Cube's "Release for OLE DB for OLAP" property. For details, see ["Releasing cubes for OLE DB for OLAP" on page 42.](#)

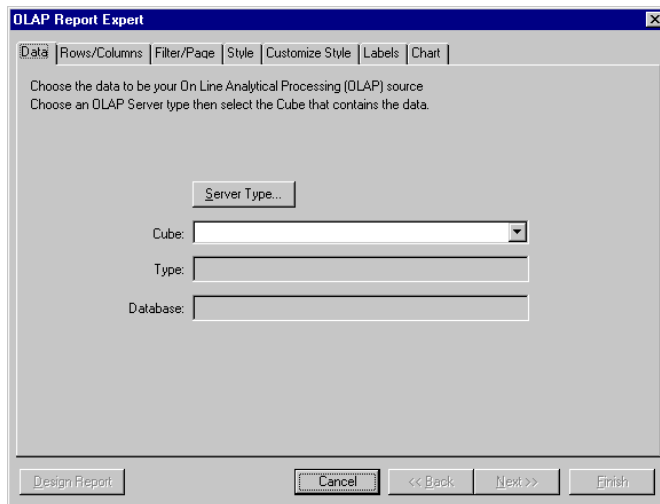
To report off an Info Query Cube

- 1 Start the Report Designer.
- 2 On the **File** menu, click **New**.
The Crystal Report Gallery appears.



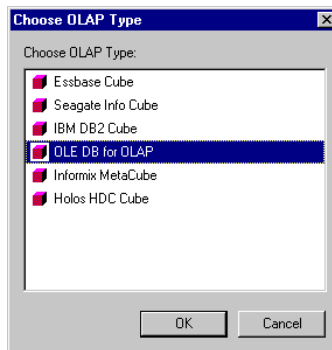
- 3 If it's not already selected, click **Using the Report Expert**.
- 4 From the **Choose an Expert** list, select **OLAP**; then click **OK**.

The Data tab of the OLAP Report Expert appears.



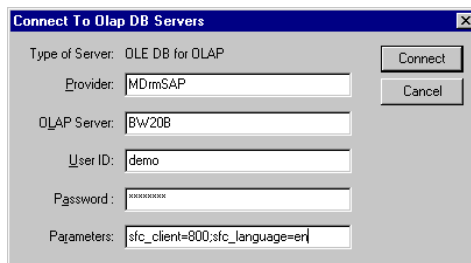
5 Click **Server Type**.

The Choose OLAP Type dialog box appears.



6 In the Choose OLAP Type dialog box, double-click **OLE DB for OLAP**.

The Connect to Olap DB Servers dialog box appears.



- 7 In the **Provider** field, type MDrmSap.
- 8 In the **OLAP Server** field, type the information that appears in the Description field of your BW server's Properties screen.

Note: To locate the required information about your BW server, start the SAP Logon screen, select your BW server from the list, and click Properties. The Report Designer's logon fields are case-sensitive, so the entries must match exactly.

- 9 In the **User ID** and **Password** fields, type your SAP user credentials.
- 10 In the **Parameters** field, provide your SAP client number and your default SAP logon language as follows:

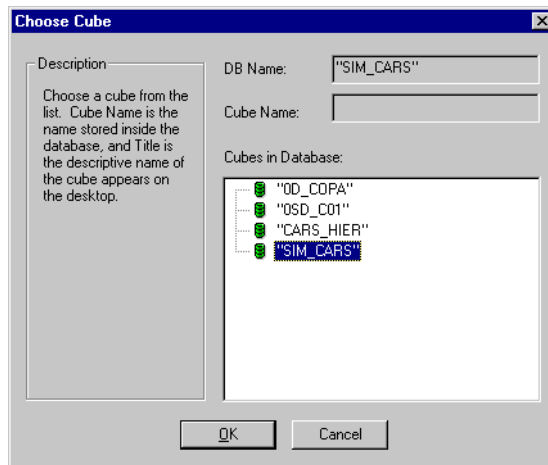
```
sfc_client=xxx;sfc_language=yy
```

For instance, if your usual SAP client number is 800, and your default language is English, you type:

```
sfc_client=800;sfc_language=en
```

- 11 Click **Connect**.

The Choose Cube dialog box appears.



- 12 Select the Info Cube that you want to report off; then click **OK**.

You are returned to the Data tab of the OLAP Report Expert.

The screenshot shows the 'OLAP Report Expert' dialog box with the 'Data' tab selected. The dialog has a title bar with a close button. Below the title bar is a tabbed interface with tabs for 'Data', 'Rows/Columns', 'Filter/Page', 'Style', 'Customize Style', 'Labels', and 'Chart'. The 'Data' tab is active and contains the following text: 'Choose the data to be your On Line Analytical Processing (OLAP) source. Choose an OLAP Server type then select the Cube that contains the data.' Below this text are four input fields: 'Server Type...' (a button), 'Cube:' (a dropdown menu showing '0D_COPA/0D_COPA_Q001'), 'Type:' (a text box containing 'OLE DB for OLAP'), and 'Database:' (a text box containing 'BW208'). At the bottom of the dialog are four buttons: 'Design Report', 'Cancel', '<< Back', and 'Next >>', followed by an 'Finish' button.

13 Click the **Cube** list to view a list of available Info Query Cubes.

14 When you've selected the appropriate cube, click **Next**.

You can now proceed through the remaining tabs of the OLAP Report Expert to specify the data you want to include and to add formatting to the OLAP report. Press F1 to obtain help on any individual tab. For more details on OLAP reporting, see the "Creating and Updating OLAP Reports" chapter in your Report Designer's printed *User's Guide* or Online Help.

Note: Within a Seagate Info or a Crystal Enterprise environment, you cannot schedule reports that were created directly off BW Info Query Cubes: the server components that process the scheduled reports (Seagate Info Servers or Crystal Job Servers) will be unable to connect to BW with the logon information that you specified for the report.

Viewing SAP Queries as Crystal Reports 5

This chapter shows how to convert SAP queries to Crystal reports from within the SAPGUI. It also provides details on navigating, exporting, and printing report data.

Overview of the SAPGUI Integration Kit

The SAPGUI Integration Kit enables you to convert SAP queries into Crystal reports from within the SAP system. You view the new Crystal reports with the Crystal Reports Viewer.

When you need to save or distribute a report, you can choose between multiple export formats, including RTF and PDF.

This chapter includes the following topics:

- “Generating Crystal report templates for SAP queries” on page 62
- “Viewing SAP queries as Crystal reports” on page 66
- “Using the Crystal Reports Viewer” on page 66

Generating Crystal report templates for SAP queries

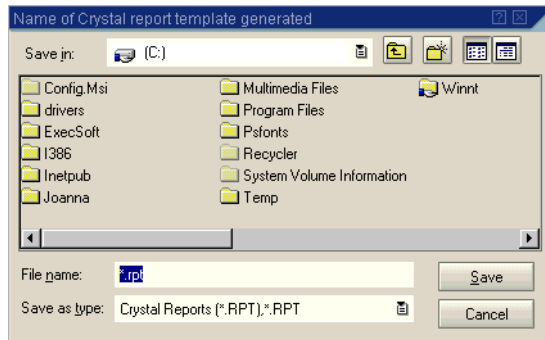
Before any SAP user can view an SAP query as a Crystal report, a corresponding Crystal report template must be added to the SAP system. You can generate this initial template quickly if you have the Report Designer installed. Once you have generated the initial report template and saved it to the SAP system, other SAP users can view the query in Crystal report format.

By creating and providing a selection of customized report templates, you allow users to enhance the formatting of the queries generated within the SAP system. You can, for instance, create templates that include customized titles, corporate logos, or contact information in the Report Header. Or, you can place your copyright information along with page numbers in the Page Footer.

To generate a report template

- 1 Execute one of your SAP queries in the SAP List Viewer.
For instruction on displaying queries in the SAP List Viewer, consult your SAP documentation.
- 2 In the SAP List Viewer screen, click the **Goto** menu and click **Crystal Reports Designer**.

The “Name of Crystal report template generated” dialog box appears.



- 3 Browse to the root directory of your local drive (usually C:\).

Tip: If you prefer to save the report template in a specific folder, ensure that the complete path contains no spaces.

- 4 Specify a **File name** for the report template.

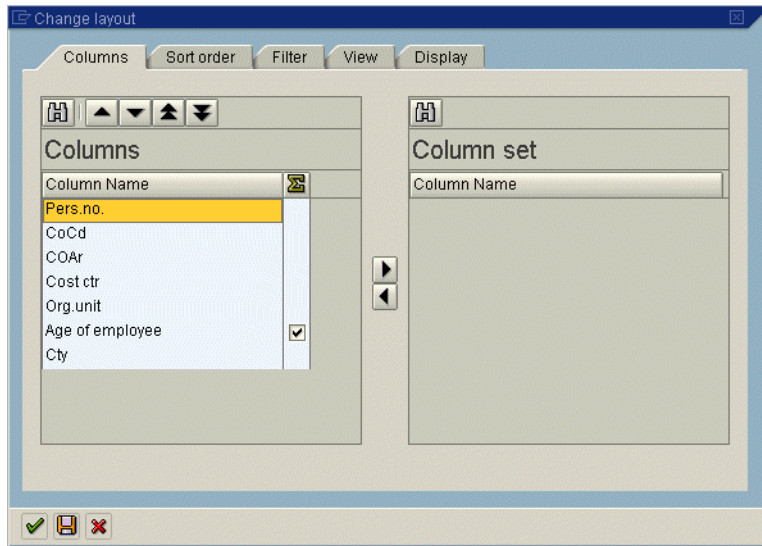
- 5 Click **Save**.

The Report Designer opens, creates the report template, and saves it to the local directory that you specified. You can now add your own formatting to the template. After saving your changes and closing the Report Designer, you must add the report template to the SAP system and associate it with the corresponding SAP query.

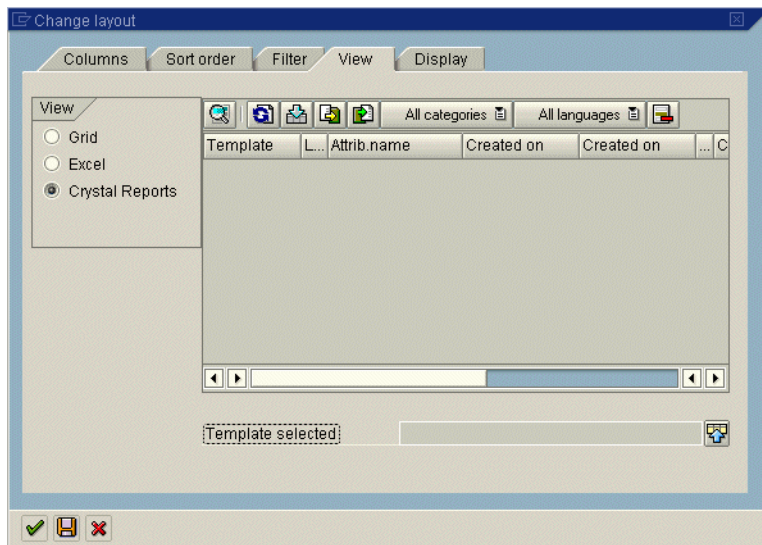
To add a report template to the SAP system

- 1 With your original query still displayed in the SAP List Viewer screen, click the **Settings** menu, point to **Layout**, and click **Change**.

The Change Layout dialog box appears.



- 2 On the **View** tab, click **Crystal Reports**.





3 Click **Create template from file**.

4 In the Open dialog box, browse to the local directory where you saved the Crystal report template.

5 Select the Crystal report template and click **Open**.

The template is uploaded to SAP's Business Document Service (BDS) and added to the list of available Crystal reports.

6 On the **View** tab, in the **Template** column, select your new template.

This adds the name of the template to the "Template selected" field.



7 Click **Save layout**.

The Save layout dialog box appears.

Layout	Descript.	DS

Save layout: /SALES

Name: Sample sales report template.

☐ User-specific ☐ Default setting

8 On the **Save as** tab, in the **Save layout** field, type / and a name for the new layout.

9 In the **Name** field, type a descriptive name for the template.

The SAP system displays this text as the Layout Description when other SAP users view the list of available report templates.

10 Select the **Default setting** option.



11 Click **Enter**.

12 In the Change layout dialog box, click **Enter**.

The query is now displayed as a Crystal report in the Crystal Reports Viewer, which is integrated into the SAPGUI.

Viewing SAP queries as Crystal reports

Once an initial Crystal report template has been associated with a particular SAP query, other SAP users can view that query as a Crystal report. If the Crystal report template has been set as the default format, then users need only execute the query to view the report.

To view an SAP query as a Crystal report

- 1 Execute one of your SAP queries in the SAP List Viewer.
For instruction on displaying queries in the SAP List Viewer, consult your SAP documentation.
If a Crystal report template has been set as the default layout, the query data is displayed in the Crystal Reports Viewer.
Note: To set or check default settings, click the Settings menu, point to Layout, and click Layout Manager.
- 2 If the output is displayed in the SAP List Viewer (instead of the Crystal Reports Viewer) click the **Settings** menu, point to **Layout**, and click **Choose**.
The Choose layout dialog box appears.
- 3 In the **Layout** column, select one of the available report templates.
The query data is displayed in the Crystal Reports Viewer.

Using the Crystal Reports Viewer

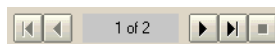
The following sections briefly show how to navigate, export, and print Crystal reports with the Crystal Reports Viewer. The viewer installation is included on the Solution Kit for mySAP.com CD.

Navigating Crystal reports

When viewing a Crystal report, navigate through the data in its entirety by clicking the page navigation buttons on the viewer's toolbar (Go to First Page, Go to Previous Page, Go to Next Page, Go to Last Page, and Stop Loading). Or, specify a particular page in the Page Number box.

To page through the report

Use the page navigation buttons on the toolbar to move through the report.



Note: The total number of report pages may not be calculated until you click the Go to Last Page button.

To increase/decrease the report's size



Type a numeric value in the **Zoom** list on the toolbar, or choose from the list of default zoom values.

Exporting and printing reports

From the Crystal Reports Viewer, you can export reports to various file formats, including version 7 and 8 Crystal report formats (.rpt), Microsoft Excel (.xls), Microsoft Word (.doc), Rich Text (.rtf), and Adobe Acrobat (.pdf). You can also print hard copies of your reports.

To export a report



- 1 In the viewer, click the **Export** button on the toolbar.
- 2 In the Export dialog box, click the **Format** list and select from the available export formats.
- 3 Click the **Destination** list and select from the available export destinations.
Tip: To save the report on your local drive, specify Disk file.
- 4 Click **OK**.
- 5 In the Export Options dialog box, specify whether you want to export **All** pages of the report or a particular **Page Range**.
- 6 Click **OK**.
- 7 Depending upon the export destination that you selected, you may need to provide additional information. For instance, if you selected Disk file, you must specify a location and name for the exported report.

To print a report locally



- 1 When the report is displayed in the Crystal Reports Viewer, click the **Print** button on the viewer's toolbar.
- 2 In the Print dialog box, click **OK** to accept the default print options.
Note: The Crystal Reports Viewer uses the default printer that is configured locally under Windows (Start > Control Panel > Printers).

To print a report to the SAP Spool

- 1 When the report is displayed in the Crystal Reports Viewer, click **Crystal Reports batch printing** on the **List** menu.
- 2 The default SAP Spool Print dialog box appears. Follow the usual SAP printing procedure.
Note: Your administrator must install the Postscript printing components in order for you to print reports to the SAP Spool.

This chapter describes some common installation and configuration issues in order to assist you in troubleshooting your Solution Kit for mySAP.com implementation.

Reports, tables, and functions

When you create a new report, the SAP data source does not appear.

- This may be the result of a failure in the client installation. Or, the files may have been deleted since installation. Run the driver installation again. See the *Solution Kit for mySAP.com Installation Guide*.

You are unable to report off an ABAP Query whose output is a Ranked List.

- SAP's ABAP query provides access to three report types that can be stored in a query: Basic Lists, Statistics, and Ranked Lists. However, the ABAP Query driver only supports Basic Lists queries at present.

You cannot add more than ten links when linking to SAP ABAP functions.

- It is not possible to have more than ten links between two tables (or, in this instance, between two functions).

Tables or fields are not displayed as expected. For instance:

- During report creation, the table or field descriptions are not shown.
- Tables are not displayed in the Data Explorer when you create a report.
There is a limit to the number of tables that can be displayed in the list. Depending on the number of tables in your SAP R/3 system, it is possible that, when creating a report, you may not have the option to see all of the SAP tables. In some cases, the option to see any of the SAP tables in the list box may not be available.
- When you create an Info View or a Crystal Dictionary against an SAP system, the tables are not displayed in the Choose SQL Table dialog box.

These problems may result from the configuration options in your Report Designer. For more information, see ["Configuration options" on page 19](#).

Errors when connecting to SAP

R/3 Error: SYSTEM_FAILURE
Function module 'Z_IMG_FETCH_DATA2' not found.

- Crystal Reports and Seagate Info reference the Z_IMG_FETCH_DATA2 ABAP function when you connect to R/3. If the function is missing, this error appears.
- Ensure that each of the server installation steps has been performed successfully.

R/3 error: System failure:
Function module RSAQ_REMOTE_FUNCAREA_CATALOG not found.

- This error message indicates that you are trying to use the Info Set driver to access a system that is older than R/3 4.6b. The Info Set driver is supported only for versions 4.6b and later of SAP R/3.

Displaying ABAP queries

No ABAP queries are displayed when you use the ABAP query driver.

- Ensure that the user name provided at log on has the valid authorizations. For details, see the *Solution Kit for mySAP.com Installation Guide*.
- Also ensure that the user belongs to the query user groups. For details, see the R/3 documentation regarding the ABAP Query tool.

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